

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A channel coding and multiplexing apparatus ~~in~~for a CDMA communication system, in which data frames that have different transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed to ~~form~~ a serial data frame, the apparatus comprising:

a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of the transport channels, each radio frame matcher having a radio frame segmenter for receiving the data frames and segmenting the data frames into radio frames; and

a multiplexer for multiplexing the radio frames to ~~form~~ the serial data frame,

wherein each radio frame segmenter determines the bit number of a radio frame according to the size of the data frames received by the corresponding frame matcher and the TTI of a radio frame and divides the data frames by the bit number of the radio frame.

2. (Cancelled)

3. (Previously Presented) The channel coding and multiplexing apparatus of claim 1, wherein each radio frame matcher further includes an interleaver for interleaving the data frames received by the corresponding frame matcher and applying the interleaved data to a corresponding radio frame segmenter.

4. (Previously Presented) The channel coding and multiplexing apparatus of claim 1, wherein each radio frame matcher further includes a rate matcher for adjusting the data rate of a radio frame received from a radio frame segmenter by one of puncturing and repeating parts of the radio frame to match the data rate of the radio frame to that of a physical channel frame.

5. (Previously Presented) The channel coding and multiplexing apparatus of claim 1, wherein the radio frame matchers are connected between channel coders and the multiplexer in an uplink channel transmitting device, and each of the radio frame matchers of the uplink channel transmitting device comprises:

an interleaver for interleaving the data frames received by the corresponding frame matcher;

a radio frame segmenter for determining the bit number of a radio frame according to the size of the data frames received by the corresponding frame matcher and a radio frame TTI and dividing the data frames by a variable, said variable being a function of the radio frame TTI; and

a rate matcher for adjusting the data rate of a radio frame received from the radio frame segmenter by one of puncturing and repeating parts of the radio frame to match the data rate of the radio frame to that of a physical channel frame.

6. (Previously Presented) The channel coding and multiplexing apparatus of claim 1, wherein the radio frame matchers are connected between channel coders and a multiplexer in a downlink channel transmitting device, and each of the radio frame matchers of the downlink channel transmitting device comprises:

an interleaver for interleaving the data frames received by the corresponding frame matcher;

a radio frame segmenter for determining the bit number of a radio frame according to the size of the data frames received by the corresponding frame matcher and a radio frame TTI and dividing the data frame by a variable, said variable being a function of the radio frame TTI.

7. (Currently Amended) A channel coding and multiplexing apparatus ~~in~~ for a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the apparatus comprising:

a number of radio frame matchers, ~~the number of radio frame matchers being at least equal to the number of transport channels,~~ each radio frame matcher having a radio frame segmenter for ~~receiving the data frames and segmenting the data frames into radio frames;~~

a multiplexer for multiplexing the radio frames ~~to form the~~ into a serial data frame; and

a physical channel segmenter ~~for segmenting~~ adapted to segment the serial data frame by the number of the physical channels and outputting the segmented physical channel frames to corresponding physical channels,

wherein the segmented physical channel frames for a physical channel #1 are output as $e_{1,j} = d_j$, the segmented physical channel frames for a physical channel #2 are output as $e_{2,j} = d_{(j+P/M)}$ and the segmented physical channel frames for a physical channel #M are output as $e_{M,j} = d_{(j+(M-1)P/M)}$, and wherein the bits of the serial data frame output from the multiplexer are d_1, d_2, \dots, d_P , the number of physical channels is M, the size of the serial data frame output from the multiplexer is P and $j = 1, 2, \dots, P/M$.

8. (Currently Amended) A channel coding and multiplexing apparatus ~~in~~for a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed to a serial data frame, the apparatus comprising:

a number of radio frame matchers, each of the radio frame matchers adapted to determine ~~a is configured for determining the~~ number of filler bits and inserting the determined number ~~one~~ of ~~the~~ filler bits into the data frames, and each of the radio frame matchers having a radio frame segmenter for ~~receiving the data frames and for segmenting the data frames having the filler bit~~ inserted number of filler bits into radio frames; and

a multiplexer for multiplexing the radio frames ~~to form~~into the serial data frame.

9. (Original) The channel coding and multiplexing apparatus of claim 8, wherein each radio frame segmenter determines the bit number of the radio frames according to the size of the corresponding data frame, a radio frame TTI, and the number of filler bits, and divides the corresponding data frame by the bit number of the radio frames.

10. (Currently Amended) The channel coding and multiplexing apparatus of claim ~~[[9]]~~8, wherein each radio frame matcher further includes an interleaver for interleaving the data frames received by the corresponding frame matcher and applying the interleaved data frames to a corresponding radio frame segmenter.

11. (Currently Amended) The channel coding and multiplexing apparatus of claim ~~[[9]]~~8, wherein each radio frame matcher further includes a rate matcher for adjusting the data rate of a

radio frame received from a radio frame segmenter by one of puncturing and repeating parts of the radio frame to match the data rate of the radio frame to that of a physical channel frame.

12. (Currently Amended) A channel coding and multiplexing apparatus ~~in~~for a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the apparatus comprising:

a number of radio frame matchers, each of the radio frame matchers determining ~~the~~a number of filler bits and inserting the determined number of ~~the~~ filler bits into the data frames and each of the radio frame matchers having a radio frame segmenter for ~~receiving the data frames and for segmenting the data frames having the~~ inserted number of filler bits into radio frames;

a multiplexer for multiplexing the radio frames ~~to form~~into a serial data frame; and

a physical channel segmenter for segmenting the multiplexed serial data frame by the number of the physical channels and ~~assigning~~outputting the segmented physical channel frames to corresponding physical channels.

13. (Cancelled)

14. (Cancelled)

15. (Currently Amended) A channel coding and multiplexing method ~~in~~for a CDMA communication system in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed ~~to form~~into a serial data frame, the method comprising~~the steps of~~:

receiving data frames;

determining a number of filler bits;

inserting the number of filler bits into the data frames;

segmenting the data frames including the filler bits into radio frames in a number of radio frame matchers, ~~the number of radio frame matchers being at least equal to the number of transport channels;~~ and

multiplexing the radio frames ~~to form~~ into the serial data frame.

16. (Currently Amended) ~~A~~ The channel coding and multiplexing method of claim 15, further comprising in a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the method comprising the steps of:

~~—receiving data frames;~~

~~—determining a number of filler bits;~~

~~—inserting the filler bits into the data frames;~~

~~—segmenting the data frames including the filler bits into radio frames in a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of transport channels;~~

~~—multiplexing the radio frames to form a serial data frame;~~

segmenting the serial data frame by the number of the physical channels; and

assigning the segmented physical channel frames to the corresponding physical channels.

17. (Cancelled)

18. (Cancelled)

19. (Currently Amended) A channel coding and multiplexing apparatus ~~in~~ for a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and ~~converted to data frames of multi-code physical channels~~ multiplexed into a serial data frame, the apparatus comprising:

a plurality of radio frame matchers, each of the radio frame matchers ~~for determining~~ adapted to determine a number of filler bits and ~~inserting to insert~~ the determined number of the

filler bits into the data frames and ~~each of the radio frame matchers~~, each of the radio frame matchers comprising a radio frame segmenter for ~~receiving the data frames and for segmenting~~ the data frames having the inserted number of filler bits into radio frames; and

a multiplexer for multiplexing the radio frames ~~to form~~ into a serial data frame,

wherein the number of filler bits is determined such that the filler bit inserted data frames can be segmented into equally sized radio frames.

20. (Currently Amended) A channel coding and multiplexing method ~~in~~ for a CDMA communication system in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed ~~to form~~ into a serial data frame, the method comprising ~~the steps of~~:

receiving data frames;

determining a number of filler bits;

inserting the number of filler bits into the data frames;

segmenting the data frames including the filler bits into radio frames in a number of radio frame matchers, ~~the number of radio frame matchers being at least equal to the number of transport channels~~; and

multiplexing the radio frames ~~to form~~ into the serial data frame,

wherein the number of filler bits is determined such that the filler bit inserted data frames can be segmented into equally sized radio frames.

21. (New) A channel coding and multiplexing method for a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the method comprising:

segmenting the received data frames into radio frames in a number of radio frame matchers;

multiplexing the radio frames into a serial data frame; and

segmenting the serial data frame by the number of the physical channels and outputting the segmented physical channel frames to corresponding physical channels,

wherein the segmented physical channel frames for physical channel #1 are output as $e_{1,j}=d_j$, the segmented physical channel frames for physical channel #2 are output as $e_{2,j}=d_{(j+P/M)}$ and the segmented physical channel frames for physical channel #M are output as $e_{M,j}=d_{(j+(M-1)P/M)}$, and wherein the bits of the serial data frame output from the multiplexer are d_1, d_2, \dots, d_P , the number of physical channels is M, the size of the serial data frame output from the multiplexing step is P and $j=1,2,\dots,P/M$.

22. (New) The channel coding and multiplexing apparatus of claim 8, wherein one filler bit is added to the end of each radio frame having frame time index $t \geq T_i - r_i + 1$ where r_i indicates the number of filler bits and T_i indicates a TTI.

23. (New) The channel coding and multiplexing apparatus of claim 12, wherein one filler bit is added to the end of each radio frame having frame time index $t \geq T_i - r_i + 1$ where r_i indicates the number of filler bits and T_i indicates a TTI.

24. (New) The channel coding and multiplexing method of claim 15, wherein one filler bit is added to the end of each radio frame having frame time index $t \geq T_i - r_i + 1$ where r_i indicates the number of filler bits and T_i indicates a TTI.

25. (New) The channel coding and multiplexing apparatus of claim 19, wherein one filler bit is added to the end of each radio frame having frame time index $t \geq T_i - r_i + 1$ where r_i indicates the number of filler bits and T_i indicates a TTI.

26. (New) The channel coding and multiplexing method of claim 20, wherein one filler bit is added to the end of each radio frame having frame time index $t \geq T_i - r_i + 1$ where r_i indicates the number of filler bits and T_i indicates a TTI.